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Pregnancy Rates for Enlisted Navy Women: How Do They Compare With U.S. Rates?

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DTIC QUALITY INSPECTED 2

19970103 092

Center for Naval Analyses

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Donald J. Cymrot, Director
Manpower, Personnel, and Training Team
Support Planning and Management Division

REPORT DOCUMENTATION PAGE

1. AGENCY USE ONLY (Leave Blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	Aug 1996	Final

4. TITLE AND SUBTITLE
Pregnancy Rates for Enlisted Navy Women: How Do They Compare With U.S. Rates?

5. FUNDING NUMBERS

C - N00014-91-C-0002

PE - 65154N

PR - R0148

6. AUTHOR(S)
AO Quester, ME MacIlvaine

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Center for Naval Analyses
4401 Ford Avenue
Alexandria, VA 22302-1498

8. PERFORMING ORGANIZATION REPORT NUMBER
CAB 96-34

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Assistant Chief of Naval Personnel for Military Personnel Policy and Career Progression (Pers 2)

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Distribution limited to DOD Agencies only. Specific Authority: N00014-96-D-0001 6 JAN 1997
Other requests for this document must be referred to: Pers 2

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

There is considerable interest in how pregnancy rates for Navy sailors compare with overall pregnancy rates in the United States. The short answer is that Navy rates are considerably below the U.S. rates. Somewhat less directly, we also conclude that the marital status patterns for pregnant sailors probably do not differ from those in the United States overall.

14. SUBJECT TERMS
Civilian personnel, comparison, enlisted personnel, females, naval personnel, pregnancy, women

15. NUMBER OF PAGES
36

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	SAR

Pregnancy Rates for Enlisted Navy Women: How Do They Compare With U.S. Rates?

Aline O. Quester
Martha E. MacIlvaine

CNA

Briefing Summary

- Pregnancy rates are estimates (not counts)
  - U.S. estimates from Department of Health and Human Services; Navy estimates from CNA
- Estimated pregnancy rates for sailors are substantially below U.S. estimated rates
- Substantial racial/ethnic differences in U.S. pregnancy/birth rates are not found in Navy
- Patterns of marital status are similar for Navy and U.S. mothers

There is considerable interest in how pregnancy rates for Navy sailors compare with overall pregnancy rates in the United States. The short answer is that Navy rates are considerably below the U.S. rates. Somewhat less directly, we also conclude that the marital status patterns for pregnant sailors probably do not differ from those in the United States overall.

The pregnancy rates that we discuss in this briefing – for the U.S. populations as a whole and for the Navy – are estimates; they are not counts of pregnancies. These estimates are, however, the best information we have.

The National Center for Health Statistics (part of the Centers for Disease Control and Prevention at the U.S. Department of Health and Human Services) compiles U.S. pregnancy information by summing:

- Live birth counts (published annually by the National Center for Health Statistics)
- Estimates of the numbers and rates of induced abortions
- Estimates of fetal loss rates.

For the Navy, CNA developed a way to estimate pregnancies for all sailors by using data on pregnancies for sailors reassigned to shore duty from sea duty and data on births in Navy hospitals.

Outline

- Pregnancy rates

- Marital status and birth rates

We'll compare Navy pregnancy rates for enlisted sailors with the pregnancy rates for the overall U.S. population.

Because pregnancy rates vary significantly by age, we will make all comparisons within age categories. Race and ethnicity also account for substantial differences in U.S. pregnancy rates. Thus, when data are available, comparisons will be made by racial/ethnic background.
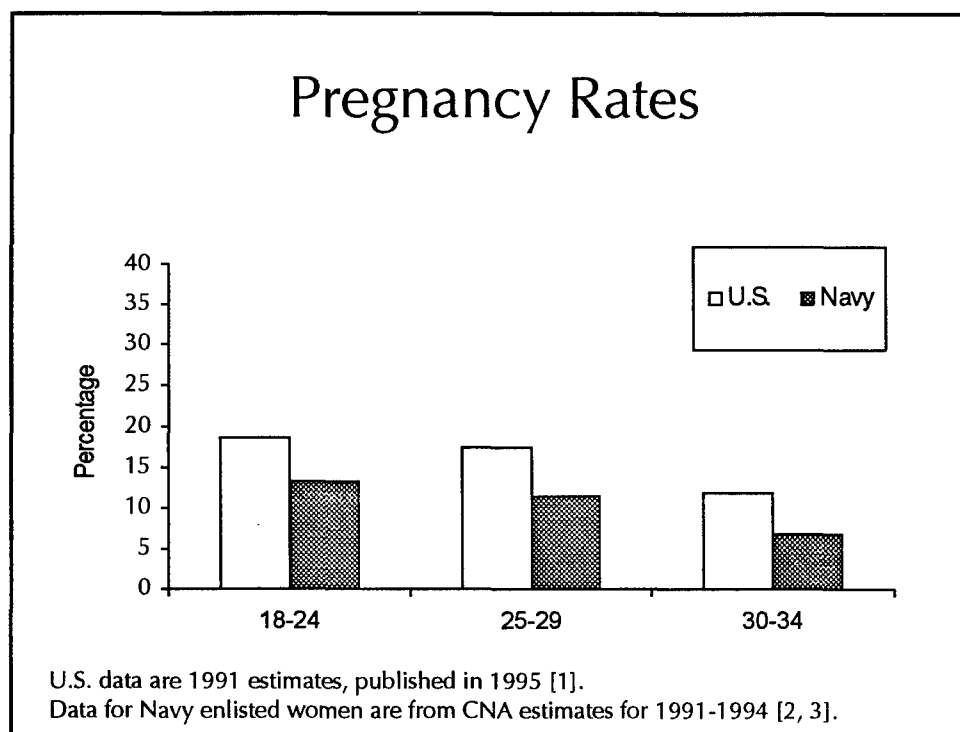
Finally, we'll look at how marital status patterns for enlisted women in the Navy who are pregnant or who give birth track with marital status patterns for pregnancies and births for the overall U.S. population.

Pregnancy Rates

- U.S. population
  - Most recent estimates are for 1991
- Enlisted women in the Navy
  - CNA estimates are for 1991-1994

The U.S. 1991 estimates are the most recent published information on pregnancy rates (U.S. Department of Health and Human Services [1]. To provide sufficient numbers for valid comparisons with the overall U.S. population, we averaged our Navy pregnancy estimates for FY91 through FY94. If we compared 1991 estimates only, there would not be enough data in some categories, particularly Hispanics in some year and age ranges.

Most of the variation in the overall pregnancy rates in the United States comes from changes in the relative numbers of women in the different age groups. Within age categories, there is little recent variation and no apparent trends in population pregnancy rates; for example, during 1980 through 1991 for women aged 20 to 24, the pregnancy rate per 100 women fluctuated from a high of 19.4 to a low 17.7, with no apparent trend. Because we do all our comparisons within age categories, we are not troubled by the fact that the year comparisons are not identical.

Pregnancy Rates

U.S. data are 1991 estimates, published in 1995 [1].
Data for Navy enlisted women are from CNA estimates for 1991-1994 [2, 3].

The U.S. pregnancy rate estimate for women aged 15 to 44 was 11.1 percent in 1991. For Navy enlisted women, we estimate an annual rate of 10.3 percent.* This small overall difference hides much larger differences by age. Navy enlisted women are much more concentrated in the younger, heavier childbearing years than are women in the overall U.S. population. In the age groups depicted in this chart, which include 84.5 percent of Navy enlisted women, the Navy pregnancy rates are about one-third lower than the U.S. rates (at least 5 percentage points). For example, in the U.S. population, the pregnancy rate for 18- to 24-year-old women was 18.6 percent, versus 13.2 percent for Navy enlisted women.

More than 60 percent of Navy pregnancies were among sailors under 25; 70 percent were among sailors in grades E-1 to E-4.

Next, we examine pregnancy rates by mother's racial/ethnic background.

---

* Navy estimates are based on almost 13,000 births in Navy hospitals to Navy enlisted women from FY91 through FY94 (see appendix for Navy estimate methodology).

The source for the U.S. population data is S. J. Ventura et al., "Trends in Pregnancies and Pregnancy Rates: Estimates for the United States, 1980-1992" [1, table 3].

Navy data are from CNA Annotated Briefing 95-127 [2] and CNA Research Memorandum 96-66 [3].

Racial/Ethnic Differences in U.S. Pregnancy Rates
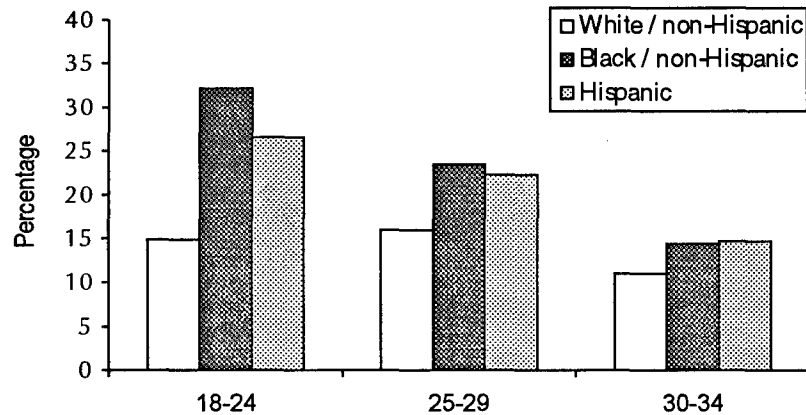
U.S. data are 1991 estimates, published in 1995 [1].

Racial/ethnic differences in the pregnancy rates for the entire United States are very large. Quoting from the most recent U.S. government report [1, table 5]:

> Data are shown by age and race. Race differentials primarily reflect differences in income, educational levels, and access to health care and health insurance. These are substantially lower for black and Hispanic women than for white women [white/non-Hispanic]. Other studies have shown that groups with low levels of income and education have higher birth rates than groups with higher levels of education and income. Statistics on abortion are not collected by education, income, occupation, or other socio-economic indicators. Thus, pregnancy rates by these measures of socio-economic status cannot be computed.

Despite the fact that we lack U.S. data on pregnancy rates by various measures of socio-economic status, the reader is left with the impression that the probable reason for higher pregnancy rates for Hispanic and black (non-Hispanic) women is that they have lower socio-economic status than white (white/non-Hispanic) women.

The Navy provides an interesting "test" for this hypothesis because all sailors have approximately the same education and income levels. Let's turn now to how Navy pregnancy rates differ by racial/ethnic status.

Racial/Ethnic Differences in Navy Pregnancy Rates
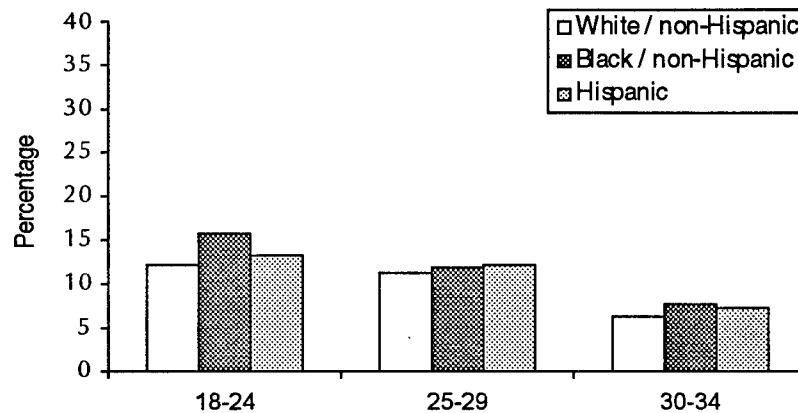
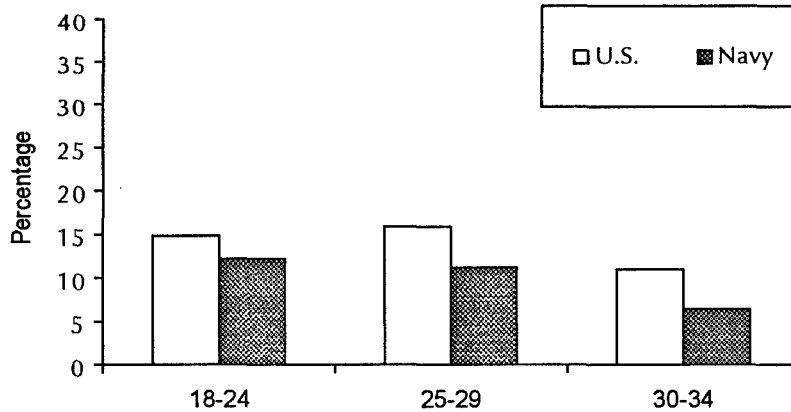Data for Navy enlisted women are from CNA estimates for 1991-1994 [2, 3].

On this slide we have categorized Navy pregnancies by the sailor's racial/ethnic status.

In sharp contrast to overall U.S. data, pregnancy rates for Navy enlisted women do not differ by racial/ethnic background. Slight differences are found among 18- to 24-year-old women, the youngest age group and those who have most recently entered the Navy.

In the U.S. population (as shown by the previous slide), rates differ substantially by race and ethnicity. We think the lack of differences among sailors speaks to the powerful socializing experience of the Navy. Additionally, in the Navy, income and education levels do not differ by a sailor's racial/ethnic background. As previously noted, other studies have attributed much of the variation in U.S. fertility behavior by racial/ethnic status to differences in income and education. Our findings for the Navy of similar pregnancy rates for sailors of similar income and education strengthen the findings from previous research.

We turn now to direct comparisons of pregnancy rates – Navy enlisted women versus the U.S. population – by racial/ethnic background. These comparisons make it very clear that pregnancy rates for Navy enlisted women are substantially below U.S. rates.

White/Non-Hispanic Women: Pregnancy Rates

U.S. data are 1991 estimates, published in 1995 [1].
Data for Navy enlisted women are from CNA estimates for 1991-1994 [2, 3].

Fortunately, U.S. population data on pregnancies are now being compiled by the racial/ethnic breakdowns used by the Navy. Here we show the pregnancy rate comparisons for white/non-Hispanic women.* In all age categories, the pregnancy rate for Navy sailors is below that for the United States.

---

* In Navy data, we include the small number of Asians/Pacific Islanders and Native Americans in the category of white/non-Hispanic women.

Black/Non-Hispanic Women: Pregnancy Rates

U.S. data are 1991 estimates, published in 1995 [1].
Data for Navy enlisted women are from CNA estimates for 1991-1994 [2, 3].

Here we show the pregnancy rates for black/non-Hispanic women.

For these women, pregnancy rates for enlisted women in the Navy are substantially below U.S. pregnancy rates for all age categories.

Hispanic Women: Pregnancy Rates

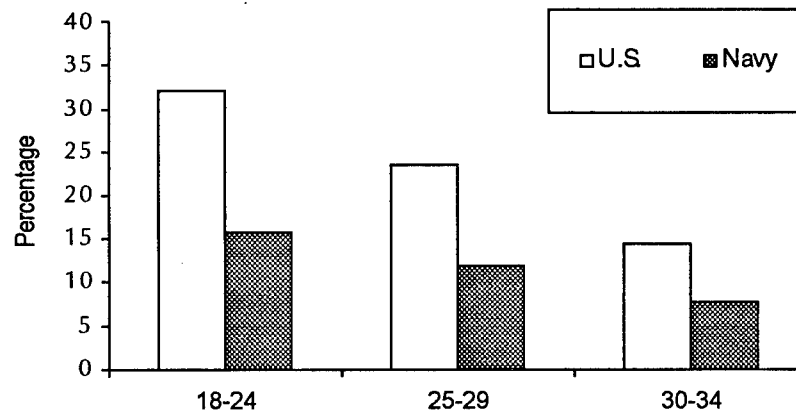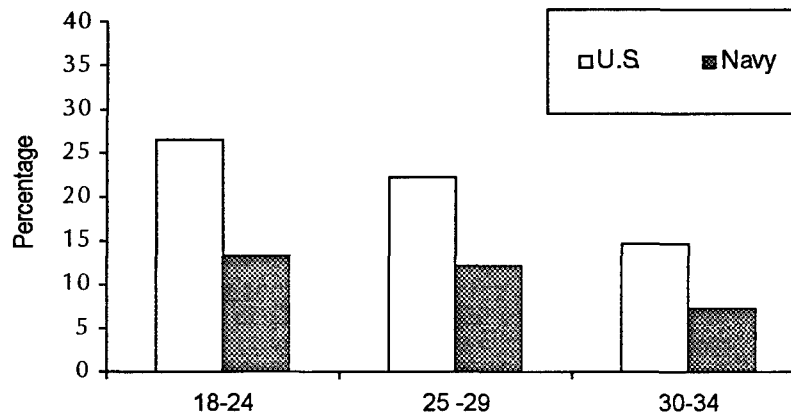U.S. data are 1991 estimates, published in 1995 [1].
Data for Navy enlisted women are from CNA estimates for 1991-1994 [2, 3].

Here we show the pregnancy rates for Hispanic women. Again, pregnancy rates for enlisted women in the Navy are substantially below U.S. pregnancy rates for all age categories.

Racial/Ethnic Differences in U.S. Pregnancy Rates

U.S. data are 1991 estimates, published in 1995 [1].

We repeat this slide here to reemphasize the sharp differences in U.S. pregnancy rates for women of different racial/ethnic backgrounds. These differences are not found among enlisted women in the Navy.

Again, significant differences in the U.S. pregnancy rates by racial/ethnic background, versus fewer differences in the Navy, is consistent with hypotheses regarding one or both of the following:

- Income and education
- Navy socialization.

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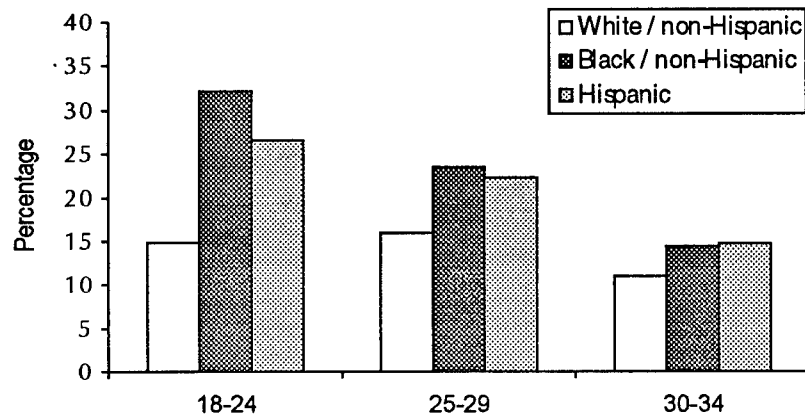Pregnancy Rates: U.S. Compared to
Navy Enlisted Women Aged 18 to 24
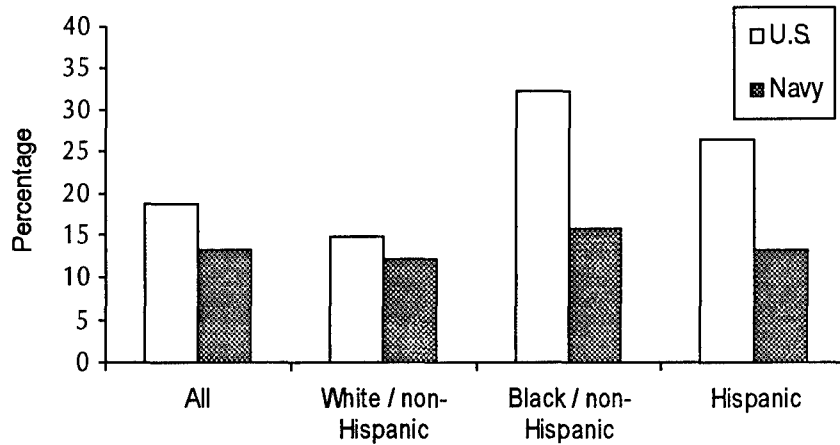
U.S. data are 1991 estimates, published in 1995 [1].
Data for Navy enlisted women are from CNA estimates for 1991-1994 [2, 3].

In both the United States and the Navy, most pregnancies (and the highest pregnancy rates) occur in the 18- to 24-year-old age group. Although we have displayed these data in previous slides, this slide best illustrates the points we want to make:

- Navy pregnancy rates for enlisted women are substantially lower than those for the U.S. general population.

- Navy rates are similar across racial/ethnic categories.

Pregnancy Outcomes for U.S. Women Aged 20 to 24

Fetal loss	▨
Abortions	▨
Live births	▨
Pregnancies	▨

0   20   40   60   80   100
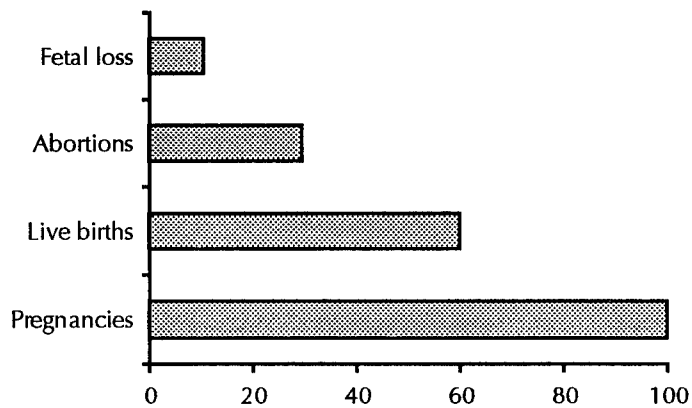
U.S. data are 1991 estimates, published in 1995 [1].

Although we have no comparable data for the Navy, we thought it worthwhile to include information on the relationship between pregnancies and births for the entire United States.

To pave the way for these comparisons, we show here the population relationship between pregnancies and births for women aged 20 to 24. In this age group, there were 61 births for every 100 pregnancies.*

---

* Remember that in the U.S. data there are counts for the births (births are registered). The pregnancy data are derived from summing the birth data and the estimates of induced abortions and fetal losses.

Source: [1, table 3].

```
┌─────────────────────────────────────────────────────────┐
│                                                           │
│              U.S. Pregnancy Rates by                      │
│              Marital Status, 1991                         │
│                                                           │
│                                                           │
│     • Married women, 15 to 44 years of age                │
│         –  11.8 percent                                   │
│                                                           │
│                                                           │
│     • Unmarried women, 15 to 44 years of age              │
│         –  10.3 percent                                   │
│                                                           │
│                                                           │
└─────────────────────────────────────────────────────────┘
```

Even though we do not have comparable data for the Navy, we think it worthwhile to include pregnancy rates by marital status for the U.S. population.

Pregnancy rates in the United States do not show much variation by marital status. In 1991, the National Center for Health Statistics reported that, for women aged 15 to 44 years, 11.8 percent of married women and 10.3 percent of unmarried women were pregnant.*

Let's turn to the data that we do have. We will analyze the marital status of sailors who gave birth in Navy hospitals and compare those data to birth data for the U.S. population.

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* The live birth probabilities differ considerably more than the pregnancy rates, 9.0 and 4.5 percent for married and unmarried women. The differences are abortions and fetal losses.
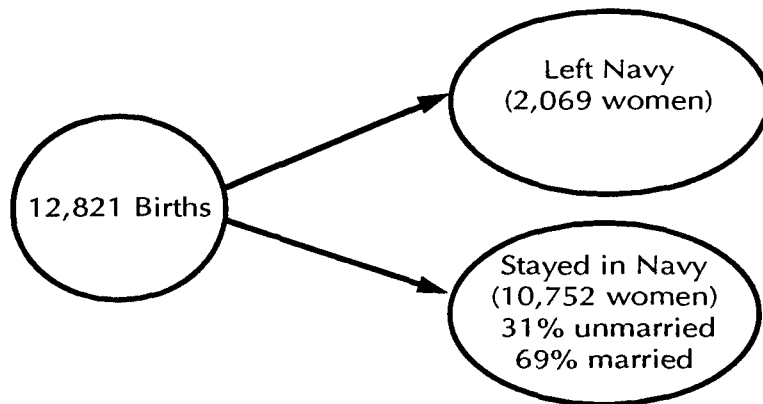
Source: [1, table 4].

Outline

- Pregnancy rates

→ - Marital status and birth rates

Births to Navy Enlisted Women in Navy Hospitals: FY91 to FY94

12,821 Births

Left Navy
(2,069 women)

Stayed in Navy
(10,752 women)
31% unmarried
69% married

We do have data on births in Navy hospitals. These data show 12,821 births to Navy enlisted sailors in FY91 through FY94.

Some women leave the Navy shortly after giving birth – here 2,069 enlisted women, about 16 percent of the mothers. Information on marital status for these women is inaccurate because there is no incentive for the Navy to record marriages for sailors leaving the Navy; therefore, we do not report marital status.

Of the almost 11,000 women who remained in the Navy, 31 percent were unmarried mothers and 69 percent were married.*

Let's turn now to how the percentage of births for unmarried Navy enlisted women compares with the overall U.S. percentage.

---

* To allow for time lags in reporting marital status changes, we use marital status at approximately six months after the birth. More information is available on a backup slide.

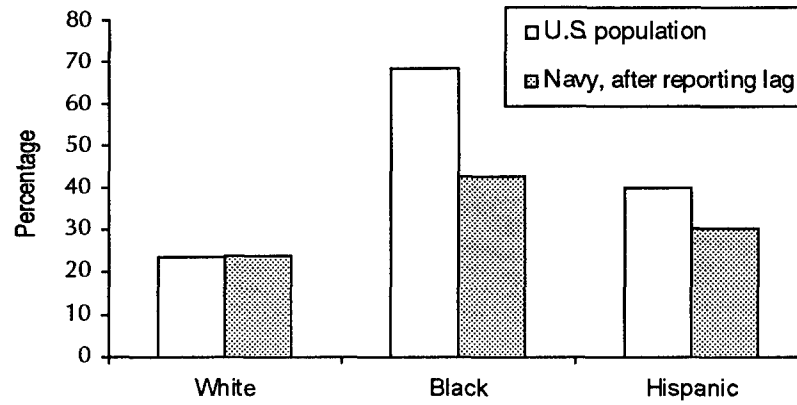## Births to Navy Sailors and U.S. Population: Percentage Not Married
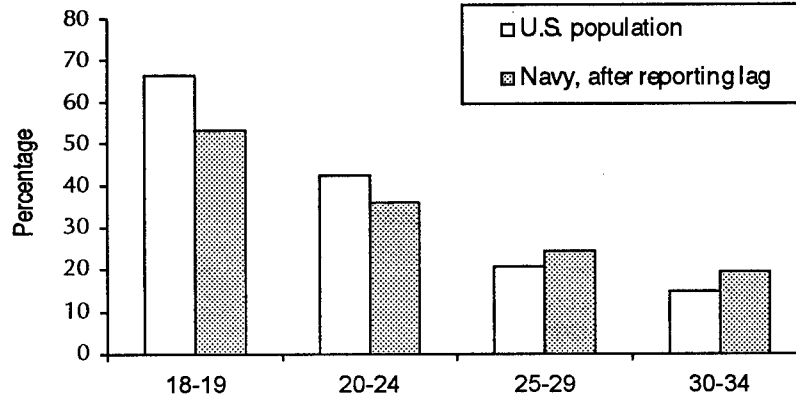
Navy data are from births in Navy hospitals from FY91 through FY94.
U.S. data are from 1993, published in 1995 [4].

In this slide, we compare the percentage of births to unmarried women in the United States with the percentage of births to Navy enlisted women. The U.S. data are from 1993, and the data for the Navy are from FY91 through FY94.

We conclude that these percentages are about the same. How, though, do they compare by the racial/ethnic background of the mother?

Births to Navy Sailors and U.S. Population: Percentage Not Married

Navy data are from births in Navy hospitals from FY91 through FY94.
U.S. data are from 1993, published in 1995 [4].

This slide shows the percentage of births to unmarried mothers in the U.S. population and in the Navy.

This slide shows that:

- Within racial/ethnic categories, the Navy percentage of births to unmarried mothers is either similar to or below the rate in the U.S. population.

- The percentages of births to unmarried mothers differ less by racial/ethnic background in the Navy than they do in the U.S. population.

This latter finding supports the hypothesis that U.S. differences by racial/ethnic background may actually be attributable to differences in income and education. These income and education differences do not exist for enlisted sailors.

Because the age distributions of the U.S. population and of Navy enlisted women differ, let's look at these comparisons within a specific age category. Probably the best one to examine is 20- to 24-year-old women – the category in which most births occur.

Source: [4, table 14].

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Percentage of Births to Unmarried Women Aged 20 to 24
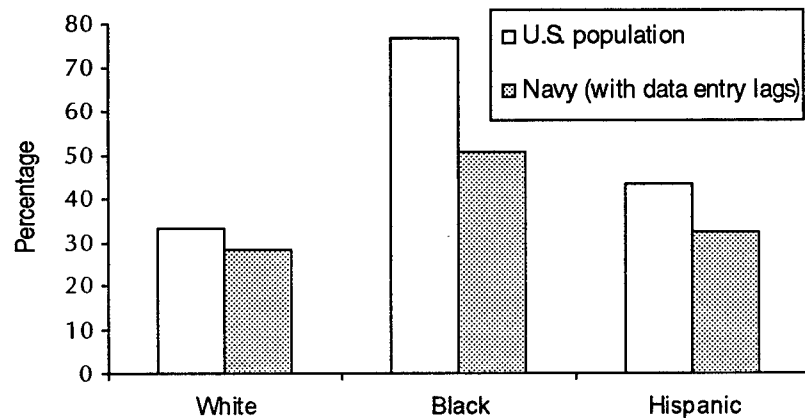
U.S. data are from 1993, published in 1995 [4].

When we restrict the comparison to a particular age group, the percentages of births to unmarried women in each racial/ethnic background category are lower in the Navy than they are in the overall United States population.

Within age categories, the percentages of births to unmarried women also differ less by mother's racial/ethnic background than they do in the overall U.S. population.

Briefing Summary

- Pregnancy rates are estimates (not counts)
  - U.S. estimates from Department of Health and Human Services; Navy estimates from CNA
- Estimated pregnancy rates for sailors are substantially below U.S. estimated rates
- Substantial racial/ethnic differences in U.S. pregnancy/birth rates are not found in Navy
- Patterns of marital status are similar for Navy and U.S. mothers

We conclude this briefing with our summary slide.

Backup slides

A Comparison of Pregnancy Rates

Navy pregnancy rate
U.S pregnancy rate
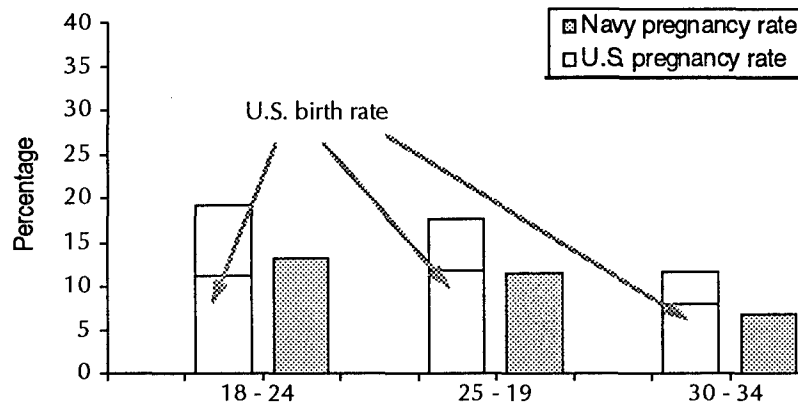
U.S. birth rate

U.S. data are 1994 projected rates [5].
Navy data are from CNA estimates for 1991-1994 [2, 3].

In this slide, the stovepipes show the pregnancy rate estimates for the United States and the Navy enlisted population.* We have indicated the U.S. birth rates on the U.S. pregnancy columns. We do not have sufficient data to compute birth rates for the Navy. Birth rates are, however, by definition lower than pregnancy rates: not all pregnancies result in live births.

In the youngest age group, the Navy *pregnancy* rate is only slightly higher than the U.S. *birth* rate. For the older age groups, *pregnancy* rates for Navy sailors are about the same as or even lower than U.S. *birth* rates.

Our methodology for estimating pregnancy rates in the Navy misses some pregnancies that terminate very early. This is also true in the U.S. data, which are for "recognized pregnancies" only. (Recognized pregnancies are those that are known to the mothers.) Our methodology misses pregnancies that terminate so early that the sailor is not reassigned from the ship.

Available data do not permit comparisons of Navy birth rates with those in the U.S. population. However, our estimated Navy *pregnancy rates* are below or similar to U.S. *birth rates.* In the United States as a whole, only 63 percent of pregnancies result in live births. Because birth rates clearly undercount pregnancy rates, Navy pregnancy rates must be below U.S. pregnancy rates.

In brief, we are very confident that pregnancy rates for enlisted sailors are lower than pregnancy rates in the overall U.S. population.

---

* The source for the U.S. data is *Statistical Abstract of the United States, 1995* [5, table 92].

The Navy pregnancy data are from CNA analysis for the 1991-1994 period.

U.S. Birth Rate for Women, 1993

Legend: ☐ White / non-Hispanic, ▨ Black / non-Hispanic, ▨ Hispanic
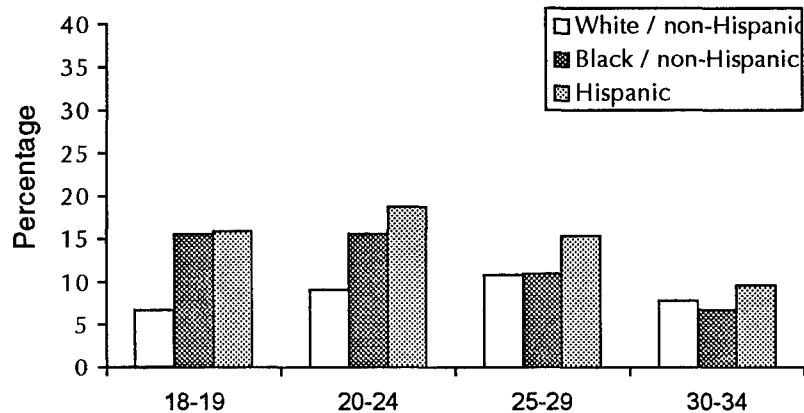
U.S. data are from 1993, published in 1995 [4].

This slide reminds us that the differences in birth rates in the United States by racial/ethnic background are very large.

The differences in pregnancy rates in the United States were also very large among women of different racial/ethnic backgrounds. In the Navy, we found much smaller differences in pregnancy rates by the racial/ethnic background of enlisted women. We don't have accurate birth data for all births to Navy enlisted women; therefore, we cannot provide birth rates by racial/ethnic background, nor can we provide overall birth rate data for Navy enlisted women.* Still, the analyses of the birth data that we do have – births to Navy enlisted women in Navy hospitals – suggest that birth rates for Navy sailors are not nearly as differentiated by the racial/ethnic background of the mother as they are in the overall United States.

---

*One can get a rough idea of birth rates by examining the change in the number of dependents, but this count is very rough. The count is accurate only for sailors adding their "first" dependent because that change affects pay. It is less accurate for others, and it misses entirely births to sailors who leave the Navy shortly after the birth of the child.

We have not been successful at getting birth data from either other-service hospitals or civilian hospitals paid under CHAMPUS. In addition, we know of no source for birth data when the birth is paid for by a civilian spouse's insurance.

Source: [4, table 7].

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Appendix

Calculating Pregnancy Rates for Enlisted Women in the Navy

This appendix explains CNA's methodology for calculating pregnancy rates for enlisted sailors in the Navy.

Introduction

Recent SECNAV and Congressional reporting requirements mandate that the Navy report annually pregnancies and other reasons for nondeployability. However, the Navy never centrally collected information on the pregnancy of its service members. Navy personnel files have places to record other reasons for nondeployability, but they have no field for pregnancy. Although existing personnel files can identify pregnant sailors reassigned from sea duty to shore duty because of pregnancy, these are the only sailors whose pregnancies can be identified in personnel files.

To satisfy these new reporting requirements, the Navy directed all commands to report nondeployable personnel, by SSN and by reason of nondeployability, in the Diary Message Reporting System (DMRS). March and December 1995 NAVADMINs and a February 1996 "Personal for Commanding Officers" from Vice Admiral Bowman, Chief of Naval Personnel, emphasized the importance of compliance with the system.

Despite the efforts, compliance with DMRS is still *very* low.* As of mid-March 1996, the DMRS pregnancy information was too incomplete to permit analyses. Until the information is more complete, pregnancy analyses with individual-level data are not possible.

The lack of individual-level information on the pregnancy status of sailors forced CNA to develop a methodology for estimating pregnancy rates for all Navy active-duty enlisted sailors. We outline the methodology in this appendix.

Available data

Because pregnant sailors are not allowed to remain on sea duty, the Navy has good information on pregnancies for these sailors. Current rules specify that sailors who are more than 20 weeks pregnant on sea duty, or who are known to be pregnant before a deployment, are reassigned to shore for pregnancy tours. Since these sailors are expected to return to sea duty some time after their pregnancies end, they need to be identified in the personnel system.

---

*For example, using 12 March 1996 data, we matched personnel with a Distribution Navy Enlisted Classification Code (DNEC) of 0054 (pregnant sailors reassigned from sea to shore commands) to personnel reported in the DMRS. Only 17 percent of the women reassigned from ship duty because of pregnancy had been reported pregnant in the diary system, which is supposed to contain information on all pregnancies for Navy women.

This is done by assigning these sailors a DNEC of 0054. This DNEC, as well as pregnancy assignment reason and projected rotation date codes, can be used to identify women reassigned to shore duty because of pregnancy.*

The Navy also has good information on Navy hospital births.** We can identify enlisted sailors who give birth in Navy hospitals and match the birth data to their personnel records.

Methodology

Overview

We calculated the probability that enlisted sailors' pregnancies result in births in Navy hospitals. We did this by matching the SSNs of Navy women reassigned from ships because of pregnancy to the SSNs of women who gave birth in Navy hospitals.

Once we had the probability that pregnancies result in births in Navy hospitals, we obtained its reciprocal – namely, the number of pregnancies represented by a birth in a Navy hospital. We then used data on Navy hospital births to impute pregnancies. In the body of the briefing, we present the estimated pregnancy rates, by the sailor's age and racial/ethnic background.

Our methodology assumes that the probability that a pregnancy results in a Navy hospital birth is the same for women in regular shore assignments and on pregnancy tours. This does not seem an unreasonable assumption because pregnant sailors are returned from ships to the shore establishment to complete their pregnancies.

Let's now look at the methodology in more detail.

Probability that births occur in Navy hospitals

We built a data set of the over 7,000 enlisted women since 1990 who were on "pregnancy tours" (assigned a DNEC of 0054). The expectation is that these women would return to sea duty, if possible to the same ship, 4 months after termination of the pregnancy. Then, we:

- Matched these observations to Navy hospital birth data (by mother's SSN)

---

*These codes are also used to identify sailors who are under orders for sea duty, but who will not be sent to sea until they complete their pregnancy tours. Sailors on pregnancy tours do not count toward the strength of the unit to which they are attached.

**We obtained the Navy hospital birth information from the Naval Medical Information Management Center (NMIMC).

- Determined whether the pregnancies resulted in Navy hospital births.

If the baby's date of birth was up to 2 months before the pregnancy tour or no more than 8 months after the date the pregnancy tour began, we said the pregnancy associated with the pregnancy tour resulted in a Navy hospital birth.

We then categorized the outcomes of the pregnancies as:

- Births in Navy hospitals (matches of SSNs with corresponding children's birth dates), as specified above

- Other outcomes (births in non-Navy hospitals, fetal losses, or abortions).

We did all calculations by mother's age group, race, and ethnic background. What did we find? First, the differences in the probability that the pregnancies result in Navy hospital births, except for very young women (18- to 19-year-olds), are very small. Even for the youngest sailors, the differences are small. The overall probability is .64. We used this probability for calculations for all enlisted sailors and for all age groups except the youngest sailors (18- to 19-year-olds).* For these sailors, we used the rate we calculated for them, .57.

Imputing pregnancy rates

We used Navy hospital births from FY91 to FY94 to calculate the pregnancy rates for Navy active-duty enlisted sailors. We chose this time period – and not one extending closer to the present – because Navy hospital birth data are reported with a time lag.

To determine pregnant sailors' characteristics, we matched the birth dates (by SSN) to Navy personnel files. We determined pregnant sailors' age, race, and ethnic background, as well as other demographic characteristics.

Pregnancies are then imputed by dividing births for the respective group by .64 (except for the subset of the age 18 to 24 group, the 18- to 19-year-olds, where we used .57). References [2] and [3] provide additional information.

---

*These sailors are a subset of the age 18 to 24 group.

References

[1] S. J. Ventura et al. "Trends in Pregnancies and Pregnancy Rates: Estimates for the United States, 1980-1992." *Monthly Vital Statistics Report,* Vol. 43, No. 11, 25 May 1995 (U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics, Hyattsville, MD)

[2] Federico E. Garcia, James L. Gasch, and Aline O. Quester. *Nondeployable and Assignment-Restricted Navy Personnel* (First Revision), Jul 1996 (CNA Annotated Briefing 95-127.10)

[3] Aline O. Quester, Martha E. MacIlvaine, and James L. Gasch. *Final Report: Pregnancy Analyses for Nondeployability Study,* forthcoming (CNA Research Memorandum 96-66)

[4] S. J. Ventura et al. "Advance Report of Final Natality Statistics, 1993." *Monthly Vital Statistics Report,* Vol. 44, No. 3, Supplement, 21 Sep 1995 (U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics, Hyattsville, MD)

[5] *Statistical Abstract of the United States,* 1995 (U.S. Department of Commerce, Bureau of the Census)

Distribution list

Annotated Briefing 96-34

SNDL
A5	CHNAVPERS Washington DC
A5	DEPCHNAVPERS
A5	PERS 00W
A5	PERS 2
A5	PERS 2B
A5	PERS 22
A5	PERS 222
A5	PERS 233
A5	PERS 4
A5	PERS 452
A5	PERS 5
FJB1	COMNAVCRUITCOM Washington DC (CNRC)
FT31	NTC Great Lakes IL
FT1	CNET Pensacola
A1H	ASN-M&RA
A1A	PDASN-M&RA

OPNAV
N00
N09
N093
N7
N71
N732
N7B
N80
N801D
N81
N813